

**From:** [Robinson, Aaron C.](#)  
**To:** [Gemlo, Lynn](#)  
**Subject:** RE: Questions on your table sent in response to S-G CNOR data call  
**Date:** Monday, March 11, 2013 12:23:53 PM  
**Attachments:** [final\\_2012 Sage brush planting review .pdf](#)

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Lynn – The grazing practices were not monitored last year due to the extreme drought in SW ND, but as for results in terms of birds that is undetermined. This is something lacking in our protocol follow-up monitoring I believe is only done on a two year cycle so I will need to look into that. Attached is a report on the sage planning results. Aaron

**From:** Gemlo, Lynn [mailto:[lynn\\_gemlo@fws.gov](mailto:lynn_gemlo@fws.gov)]  
**Sent:** Monday, March 11, 2013 9:59 AM  
**To:** Robinson, Aaron C.  
**Subject:** Re: Questions on your table sent in response to S-G CNOR data call

As far as part of our annual review, I just wanted to understand its development. I did not need to see it immediately, I did not mean to give that impression.

If I could ask a couple questions-Since 2004, the direct land owner payments for s-g conservation practices have been occurring. Do you have monitoring results on these practices and what are those results showing? Also, with the large amount of grazing systems acres (11,886) to improve residual cover and range health, are your results showing improvements? Also, with the sage brush plugs and grass plantings, any results from monitoring? Thanks for your assistance, Lynn

On Mon, Mar 11, 2013 at 10:36 AM, Robinson, Aaron C. <[acrobenson@nd.gov](mailto:acrobenson@nd.gov)> wrote:  
We have a draft completed but the final is not through our internal reviews. Is this something that you need asap? I was under the assumption that the service will not be looking at the state plans until the end of this year?

**From:** Gemlo, Lynn [mailto:[lynn\\_gemlo@fws.gov](mailto:lynn_gemlo@fws.gov)]  
**Sent:** Monday, March 11, 2013 9:34 AM  
**To:** Robinson, Aaron C.  
**Subject:** Questions on your table sent in response to S-G CNOR data call

Hi Aaron, Re: revision of current state management plan-did that occur in January as you has stated? If not, do you have an update as to its development? Is this plan available on-line to look at?

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November 5, 2012

**Background:**

On May 10 and 11, 2012, Jody Forman, Cindy Zachmeier, Jon Fettig, Wayne Duckwitz, Jaden Honeyman, and Jeff Printz conducted a review of the big sagebrush plantings completed from 2009 to 2011 in western Bowman County. The purpose of this review was to evaluate effectiveness of different planting techniques, site selection, and timing.

**Findings and Recommendations:**

1. Plantings made during early spring or late fall periods appear to have the best survival rates, while plantings made during the late summer period had the worst survival rates.
  - a. **Recommendation:** Limit planting windows to early spring and late fall, provided soil moisture conditions are favorable.
2. Age of vegetative material didn't seem to affect survival rates. Survival rates for stock transplanted to field sites the same year as germination appeared to have the same survival rates as two year old stock.
  - a. **Recommendation:** Propagate material in the greenhouse in January/February to be planted in early spring or held over the summer for planting in late fall. It can be difficult to maintain containerized material over the summer, but small quantities are manageable.
3. Pre-treatment of planting areas (spot spraying with Glyphosate) did not appear to improve survival.
  - a. **Recommendation:** Based upon this review, it does not appear necessary to eliminate the grass competition by spot spraying with Glyphosate.
4. The use of cardboard shelters did not improve survival rates.
  - a. **Recommendation:** Based upon this review, it does not appear that the cardboard tubes provide any benefit to the big sagebrush seedling.
5. Planting sites with clayey soils proved problematic. It was difficult to properly replace soil around roots on sites with heavy clay soils. This resulted in lower survival rates due to air spaces and poor soil to root contact. Loam and sandy loam surface textures provided the best potential for survival.
  - a. **Recommendation:** Select planting sites with loam, sandy loam, or sandy surface textures to ensure good soil to root contact and reduce the potential of air pockets near roots.
6. Some plantings were done using a sharpshooter to dig holes (left photo below) while others were done with a Giddings probe truck with an auger attachment (middle photo below). Using the Giddings auger was much faster and easier, although this method still required some shovel work to clean out the holes before planting (right photo below). Proper compaction around the plants was an issue with either method when planting in clayey soils.



- a. **Recommendation:** When possible, utilize a Giddings probe truck with auger attachment for drilling the holes during planting. Although this still requires some shovel work, labor and planting time is greatly reduced.
7. Initial planting sites within each field were selected by correlating soils/landscapes to ecological site descriptions which indicated big sagebrush would have been present in the reference plant community. Since big sagebrush is not fire tolerant, it most often would have occurred on those ecological sites which, in reference condition, did not produce adequate fine fuels to carry a fire with any regular frequency (i.e. thin claypan, dense clay, shallow clay). However, due to the difficulties in obtaining good soil to root contact when planting, ecological sites with clayey surface textures may not provide the best alternatives when selecting planting sites. Since fire (wildfire and prescribed burning) is presently a very seldom occurrence, selecting sites where big sagebrush was not a reference plant community component is an alternative. Based upon the results of this review, big sagebrush is adapted to other sites, especially when established using containerized plants.
  - a. **Recommendation:** Although adapted to other ecological sites, selecting planting sites based upon ecological sites which afford a more open plant community (e.g. less foliar cover, more bare ground) would offer opportunities for further propagation by seed once the plants are established.

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➤ **Site 1**



- Planted spring of 2011
- 50-60% survival
- Good soils
- Surviving plants showed good vigor
- Smooth brome was dominant vegetation

➤ **Site 2**



- Planted spring of 2011
- East plantings were better
  - More cover
  - More vegetation-crested wheatgrass dominant
  - More vigorous
- West plantings
  - Less vigorous
  - 45% survival
  - Sandy soils

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➤ **Site 3**



- Planted using Giddings auger truck in October, 2011
- Very heavy compacted soils at planting site
- 90% survival on plantings with Giddings auger truck
- 50% survival on hand plants
- Clayey soils
- Bare soil surface with no cover
- Below average seedling vigor

➤ **Site 4**



- September 2011 planting
  - No success
  - Grasshoppers were noted on the new plugs shortly after planting
  - Hot temperatures
  - Dry soils
  - Plugs were watered after planting
  - Planted into native grass
- October 2011 planting
  - 90% success
  - Variation in soils
  - No difference between native planting and crested wheatgrass/alfalfa
  - No difference between those planted using the Giddings auger truck and hand planted

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➤ **Site 5**



Dead sagebrush seedling

- Planted October, 2011
- Planted using Giddings auger truck
- 90% survival
- Native grass seeding on pipeline
- Sandy loam soils

➤ **Site 6**



- Planted May, 2011
- 4 plantings going from east to west
  - 20,30,60,80% survival respectively
- Survival was much better on lighter soils
- The site had been hayed in 2011, so true potential was hard to judge
- Crested wheatgrass/alfalfa dominant cover

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➤ **Site 7**



- September, 2011 planting
  - Early September planting
  - Hand planted using shovels
  - Smooth brome dominant cover
  - 8,15,20% survival respectively across site
  - Very dry conditions
  - Poor planting conditions
- October, 2011 planting
  - Planted using Giddings auger probe truck
  - Sandy soils
  - Smooth brome dominant cover
  - 90% survival
  - Vigorous
  - Existing silver and big sage had a lot of decadence due to girdling by rodents

➤ **Site 8**



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- Big sagebrush seed was broadcast by hand out of the back of a pickup onto snow cover in November of 2009 after grass mixture was seeded fall dormant.
  - Broadcast seeding was considered successful for those small areas of the field on which the seed was broadcast; however, actual seeding rate is not known - nor is it known how many areas within the field received seed but failed to grow
- Hand planting completed April of 2010
  - 50% survival on hand plants
  - Heavy cardboard used as a shelter for the plugs
  - Good moisture at time of hand planting
  - Northeast corner of planting was too wet and some of the plants may have drowned out

➤ **Site 9**



- Planted April of 2010
- Planting sites were spot sprayed with Glyphosate.
- Good survival across most sites
- Thin claypan sites were difficult to plant due to clay surface texture and limited depth of topsoil over claypan (0 to 4 inches)